Smithsonian Institution
Washington Jan 6. 17.

Maj. Benj Perley Poore,
Capitol

Dear Sir;

Will you be kind
enough to send for the use of
this Institution a few copies
of the Directory of Congress for
the 3d. Session of the present
Congress. By so doing you
will oblige,

Yours very truly
Joseph Henry
Secty. S. Inst.

7/6

Professor Henry

The great Scientist.

Dear Sir

Albany May 8th 1832

After a delay which I fear has nearly exhausted your patience I have at length sent off your magnet according to the directions given in your letter of the 8th of Dec. I can get nothing made in albany in the philosophical line except I stand continually over the workman during the operation or unless which is most often the case, I do the work entirely myself, and for two months past my time not devoted to my duties in the academy has been so much occupied by an engagement which required my particular attention that I could find no leisure until lately to make the necessary experiments relative to the proper size of the battery. I hope however the article will be received in time for exhibition to your present class and that you and they will not be disappointed in its magnetic power. It was shipped from here on the 4th inst. The following is a particular description of the magnet its construction method of experimenting with it &c.

The horseshoe is formed of a bar of American iron which according to the mechanic who did the filing was unusually hard it was by no means selected on this account but was taken because it happened to be the only piece of the proper size to be procured in albany at the time. After bending it into the required form the edges were first rounded with the hammer and afterwards with a file and in order to prevent the slipping off of the wires to be coiled around it a deep groove was filed into each leg about 1/2 an inch from the end. The horseshoe when it came from the hands of the "Finisher" weighed 6 Olbs and the armature about 20 lbs: these are almost precisely the same weights of the armature and magnet of Yale College. The winding on of the wires was done with great care under my constant inspection and according to a method which I think much preferable to any before adopted. Instead of covering the wires with cotton or silk thread as in former experiments I gave them several coatings of a varnish made of Shellack and mastic and in order to render the insulation still more perfect a thickness of silk was woven as it were between every spire or turn of each wire and the several layers of wires were separated from each other by an intervening thickness of silk and varnish. The operation was as follows: the iron horseshoe was in the first place covered with a coating of varnish and while this was yet soft the whole was wound with strips or ribbons of silk a coating of varnish was then given to the silk and suffered to become dry before the winding of the wire was commenced. In coiling on the wire one spire was passed around the horseshoe with the end of a broad flap of silk between it and the iron the silk flap was then turned back and the second spire coiled under it the third spire passed over the silk and the fourth again under it and so on until the whole surface was thus covered with one thickness of wire The whole was again varnished and covered with ribbons of silk a second thickness of wire was then coiled on in the same manner as the first and so on until the operation was finished care being taken to have the varnish well dried before winding on the several layers of wires. This process was a very tedious one and occupied myself and two other persons every evening for two weeks It is one however which will insure success if other circumstances are favourable. The iron is entirely covered in the above manner with four thicknesses of wire and near the ends with five. There are in all 30 strands each 35 feet long so that exclusive of the projecting ends there are about 1000 feet of wire actually coiled around the magnet In the construction of a large magnet of this kind much caution is required in arranging the several wires so that the galvanic current shall pass through none in an adverse direction and also that two projecting ends belonging to different poles of the battery do not

You can inclose the amount for the magnet say $45 in bills of the United States Bank & I presume they will come safe to hand

$00000000

project from the magnet from the same point for in this case the galvanic current will have a strong tendency to pass directly from one wire to the other without making the entire circuit of the wire around the magnet and these conditions you will observe it is somewhat difficult to fulfil when as in the present case there are 60 projecting ends By not attending to these particulars in one instance a magnet which was partially wound for me by a mechanic entirely failed

The construction of the battery will be evident from inspection and therefore requires but little description it may perhaps be necessary to mention that it is intended to have the zinc separated from the copper by wooden wedges driven in at the <u>top</u> and not at the <u>bottom</u> and these should not be more than two inches long; with this construction the battery can be nearly all immersed without wetting the wood with the acid which causes a slight galvanic action to be continued after the acid is withdrawn and which in some experiments is very inconvenient. The zinc cylinders of the battery are formed of thin plates of sheet zinc soldered together so as to form two thicknesses you can have these replaced in proper time by cylinders of cast zinc but I do not think from my own experience tha the galvanic action continues as long from a piece of cast as from a plate of rolled zinc All the wires as you will see from the magnet are connected together into two poles ~~from~~ by means of two slips of copper; on one of these I have scratched a <u>C</u> and on the other a <u>Z</u> indicating to which pole of the battery the copper slip is to be soldered. It is necessary to be particular in attaching these in their proper order as from the circumstance of the hardness of the iron it has acquired a permanent magnetism the polarity of which corresponds to that induced by the action of the galvanic current when the battery is attached as above directed. You will also notice two thimbles soldered one to each pole of the battery these are intended to be filled with mercury after being amalgamated with a solution of the nitrate of the same metal and to receive the poles of a second battery which is necessary in the experiment of changing the polarity of the magnet. For immersing the battery into the acid I use a common earthenware jar or <u>crock</u> which should be of sufficient depth to allow the cylinder to be entirely submerged; it may for convenience be suspended by pullies and ~~similar~~ counter weights. For a plan of a frame for suspending the magnet with a scale and steelyard attached I must refer you to my paper in the 19th vol of the Jour. of Science. — The method of exhibiting the power of the magnet is very simple except in the case where it is required to shew the absolute <u>maximum</u> of magnetic intensity which the iron is capable of receiving in this case particular attention must be paid to ~~several~~ every circumstance which will in the least affect the result, 1st the Acid should be of such a strength and quality as to act powerfully and suddenly on the zinc Mr. Sturgeon reccommends nitric acid with six or eight times its weight of water only. 2d the battery should be new although not covered with the oxide attached to the surface of sheet zinc as it is found in commerce. 3rd it should not be immersed into the acid 24 hours previous to the experiment or I mean to say that the experiment should not be tried until after the battery has reposed that length of time. 4th care must be taken that the faces of the armature and the extremities of the magnet are perfectly clean and free from rust. 5th The stirrup which passes over the armature should rest on the middle of the ridge of the armature and so placed as not to touch the sides when the weight comes to bear upon it 6th The scale beneath

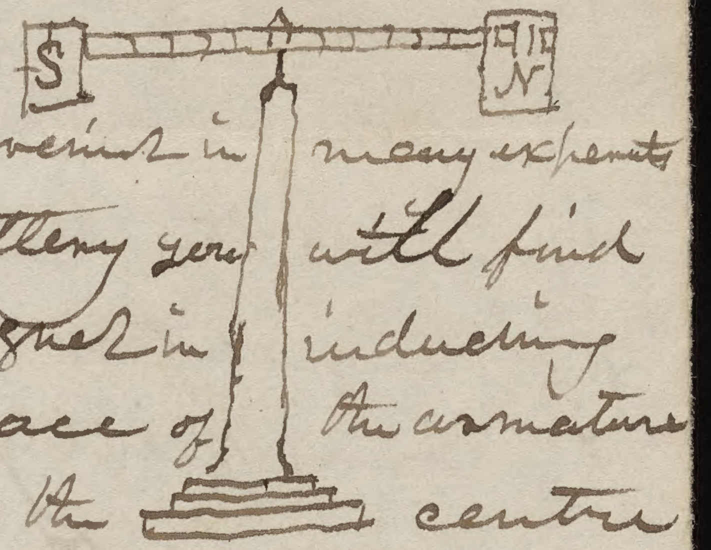
You will probably think me unnecessarily minute in my descriptions but I have thought it best to err on the safe side even at the hazard of taxing too much your time with that which is perfectly obvious to you

the magnet must be loaded with nearly as much weight as you suppose magnet will carry a sliding weight of about 30 lbs must then be placed on the lever which can be quickly moved from one end of the bar to the ~~the~~ to estimate the power more minutily a second sliding weight can be used of about 10 lbs or less. 7th When every thing is thus arranged the whole weight should be raised by two men lifting at the longer end of the lever a third person attending place and hold the armature in its proper position and a fourth to raise the jar of acid at the given word the battery must be suddenly and entirely immersed the weight quickly although gently lowered so as to bear on the stirrup the sliding weight must then be quickly placed on the lever close to the magnet and afterwards moved successively towards the farther end until the pressure becomes too great for the power of the magnet and the whole falls. The last position of the sliding weight by allowing for the leverage, with the weight on the scale gives the maximum of magnetic power It must be recollected that the greatest effect is produced at the first moment of immersion and consequently the experiment should only occupy if possible a few seconds of time. In observing all the precaution above ennumerated I succeeded in making your magnet sustain for a few seconds and with the smaller battery first used 1700 lbs by employing the larger battery which I send attached to the magnet its power is increased at least 500 lbs I have determined this not by actual ~~[illegible]~~ experiment with weights as in the fore case but by means of a magnetometer which I have lately applied to such investigations. I was much disappointed in its not pro[ducing] a greater effect in the first ~~place~~ instance as the insulation of the wires we[re] more perfect than in any other I have constructed and the wires more [...] but the effect is explained by the hardness of the iron which requires a larg[er] quantity of Galvanism to develope in it the same intensity of magnetism ~~than~~ a[s] a softer piece of iron. This magnet from the same cause retains the magnetism more powerful and longer ~~than~~ after the acid has been withdrawn than any I have before constructed In one case the armature could scarcely be removed by the hand after it had adhered more than a month from the time of the excitation and it will continue to support several hundred pounds for some time after the acid is first withdrawn from the battery. To exhibit the lifting power of the magnet to a class I find the following method the most convenient the scale is first loaded with about 12 or 13 hundred pounds or the ammount of weight the magnet will readily sustain without any very particular precautions this is raised by means of the lever and the battery entirely imersed and kept immersed until we have seen that the magnet fairly supports the weight the acid is then slowly withdrawn and the whole weight suffered to fall, pieces of plank or timber should be placed on the floor so that the fall may not be more than 5 or 6 inches. If a greater effect be required and the action to be continued for some time it will be necessary to employ a larger battery and to immerse this but partially at first and gradually let it into the acid so that while the power decreases in the ~~[illegible]~~ part first immersed, a fresh portion will continually come in contact with the acid; but I presume your class will be sufficiently gratified in seeing it support 13 hundred.

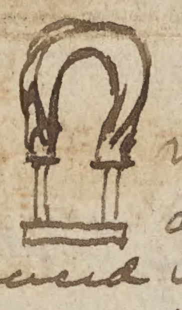
To show the experiment of the instantaneous change of polarity a second battery containing about a foot or more of zinc must be attached by means of the thimbles of mercury in such a manner that the galvanic current from it may circulate in an opposite direction to that from the battery permanently attached to the magnet. Let th[e]

(I have noticed in this magnet a very singular circumstance which arises in part from the hardness of the iron it is this the magnet possesses a permanent polarity which has probably been communicated to it by constantly exciting it with galvanic currents from the same battery in the same direction now when I have chang[ed] the polarity by using a small battery containing about 1/2 a foot of zinc this change is not permanent but on withdrawing the battery the magnet instantaneously resumes its former polarity [?] of the second polarity was only superinduced upon the first)

armature be loaded with two or three hundred pounds and the ~~battery excited~~ magnet excited by the second battery while the weight is supported let an assistant quickly raise the jar containing the acid so as to immerse suddenly the ~~first~~ battery at the same instant you withdraw the poles or wires ~~from~~ of the 2nd battery from the amalgamated thimbles when this is properly managed the weight will continue to adhere although there is a moment of time when the horseshoe is devoid of magnetism To render the fact of the actual change of polarity evident to a large class I place two magnetic needles one on each side of the legs of the magnet and these at the instant of the change of polarity turn half way round and present their opposite poles to the magnet I find it most convenient to make these needles of pieces of watch spring tied together (but first magnetized separately) with a small brass cap between them. They are supported on a stand with a fine sewing needle as the pivot and a piece of thin card is attached to each pole with N on one and S on the other, thus



These needles are about 10 or 12 inches long and are very convenient in many experiments on magnetism and electro-magnetism. In the box containing the battery you will find two pieces of round iron these are for showing the power of the magnet in inducing magnetism in soft iron they must be placed upright on the face of the armature at such a distance from each other that their axes may be on the centre of the faces of the legs of the magnet thus



while in this position immerse the battery and the two pieces of iron will adhere to the magnet and the armature to them so as to make the whole nearly as solid as one piece. If you use the magnet for touching bars of steel they should be placed in contact ~~and removed~~ before the battery is immersed and withdrawn before the battery leaves the acid. in this way I have magnetized to saturation in almost an instant a bar nearly ½ an inch thick an inch broad and 16 inches long

The following is the cost of materials and making not including any thing of course for my own labour or superintendence

Messrs Townsends bill for forging magnet 80 lbs at 12 cts	$9.60
Finishing do — —	6.00
2 pieces round iron 12½ lbs	1.53
Filing do — — —	.50
Mechanics labour winding varnishing &c	12.00
Copper wire — — —	8.00
	37.63

Amount brought up	37.63
battery double zinc plates — —	6.00
Silk and varnish	1.50
Boxes packing & cartage	1.00
	46.13

The above is the actual amount of my expenditures in the construction of the apparatus the bill of iron and finishing was somewhat greater than I anticipated with regard to my own labour I consider myself sufficiently paid in the additional knowledge and experience I have gained in the construction use of the instrument

To Prof. Cleaveland

I am with much Respect
Yours &c Joseph Henry

To Prof. Parker Cleaveland
Brunswick
Maine

single

Jos Henry

1st Rewata of Smithsonian

Prof. Henry's Description of Electro-Magnet.
May 8 1832.

In the experiments of the change of polarity I have produced the effect by transmitting a current through a long wire of copper from the further end of the lecture room

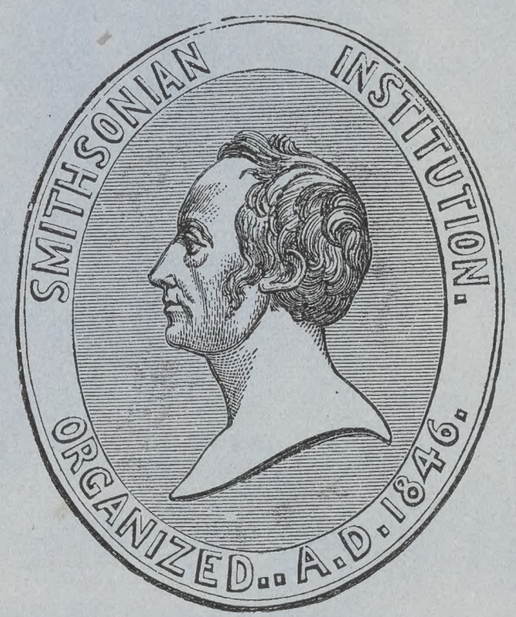
Please write me if you receive the magnet safely and what weight you will lift in experimenting with it

DSI

HENRY, J. DS 3-24-95

1252

The Smithsonian Institution,



has received from The Mercantile Library Association,

San Francisco,

Twenty-second Annual Report

a gift for which it returns a grateful acknowledgment.

Joseph Henry

Director S.I.

Smithsonian Institution,

Washington City, U.S.A., March 24, 1894

A. No. 1.

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Washington December 10, 1885

The Regents of the University on account of the New York State Cabinet of Natural History
To the Smithsonian Institution, Dr.

To share of expenses incurred by the Smithsonian Institution in making Natural History collections in Newfoundland. 150.00

Rec'd payment
Joseph Henry
Sec'y S. I.

The

over

The disbursement of the money for this account has been made by Professor Baird of this Institution

Joseph Henry
Sec. S. I.

DSI

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Smithsonian Institution.

Washington. Oct 4. 1853.

Dear Sir,

Your favor of September 28th was received, but a press of business has prevented me from answering it till this morning.

Full sets of the Smithsonian Contributions to knowledge, are not presented to individuals, but to colleges, learned societies and the larger libraries. The whole edition which the funds will allow, consists of 1500 copies, and these are to supply the whole world.

We already send to Albany, four copies of our transactions, and every person who is anxious to study the papers can have access to them.

Any separate memoir which may be of importance in the line of your researches will be presented to you.

I have the honor to be

Very Respectfully

Your Obdt servt

Joseph Henry

Sec'y S. I.

Hon. Henry S. Randall.

Secretary of the State of New York.

Albany.

Schenectady

(over)

P. S. All the publications of the Smithsonian Institution (except the first volume) can be purchased of G. P. Putnam New York.

Smithsonian Institution.
Washington. Jan 11. 1867.

Dear Sir

The package containing the reports of the Northampton Lunatic Hospital was duly received. We have already forwarded a number of the reports and will send the remainder at an early date.

Yours respectfully
Joseph Henry

Dr Pliny Earl
Northampton
Mass.

ISD

Prof. Joel Henry.
Jan 4 67.

Smithsonian Institution
Washington March 18 1865

Dear Sir

Your letter of March 10th was duly received but a press of business connected with the Government has prevented an earlier reply. It is with much pleasure that we acknowledge your claim to be a recipient of the Smithsonian Reports, and have directed that those for 63 & 64 be sent you. We regret that we are unable to furnish you with that for 62 as the edition is exhausted —

Truly Yours

Joseph Henry

Hon. Mills Esq
Buffalo N.Y.

[redacted]

[redacted]

Smithsonian Institution,
Washington, D. C.

Dear Sir;

It will give us pleasure to mail the books for Canada, for which purpose you have sent us the necessary stamps.

Accept our thanks, please, for the ten Copies of Astronomical and Meteorological Observations for 1873.

Please say to Prof. Newcomb that the two volumes he sends April 17th will be duly transmitted

as addressed.

I am very truly yours

Joseph Henry

Secy. S. I.

April 10th 1876.

R. Admiral C. H. Davis

Supt. U. S. N. Observatory,

Smithsonian Institution
Washington, Aug 21. 1857.

Dear Sir

In answer to your letter relative to the use of a Barometer to a practical farmer I have to inform you that the Institution usually gives indications of coming changes in the conditions of the atmosphere and therefore serves to warn the farmer to make preparations for the weather which might be injurious either to his crops or live stock. The indications however require to be studied since they are different for different places though in general a sudden rise of the Barometer and a subsequent rapid fall indicates an approaching storm.

Very Respectfully
Your Obed't Servt
Joseph Henry
Sec'y. S. I.

J. R. Pimby
Medina Orleans Co.
New York

From *New York Observer*: "In this day, when science boasts itself against revealed religion, and claims to have demonstrated that the inspired Book of God is unreliable, that we should point with intense

ISO

Smithsonian Institution,

Washington, Sep. 10. 49.

Dear Sir;

We write to acknowledge the receipt of the pamphlets and drawings which accompanied your Communication of the 27th January and to assure you of the pleasure afforded us by the announcement of your intention to send us, at an early day, copies, as well as specimens, Charts &c, of other objects of Ancient Irish manufacture now in your possession. We need hardly say that the Institution will look forward with much interest to the arrival of what has been promised by you, - especially the stone implements, of which you make mention, and which we are especially desirous to possess, - while in return for

these specimens as well as for exhibition
else you may deem it a proper
recipient, it will gladly return an
full equivalent in American Objects
of similar character

Yours very truly

Joseph Henry

Secy. Smiths. Inst.

Robt. Day Jr. Esq
Rathcrien
Enniscorthy
Cork Ireland,

SMITHSONIAN INSTITUTION,

WASHINGTON, Feb 24 1877

Dear Sir,

Your letter in regard to a Hydraulic engine for the creation of power has been received and in reply I have to inform you that your invention is one which has occupied the minds of men for thousands of years and which modern science in one of its best and widest generalizations has proved to be utterly impossible. No machine can be invented which shall pump up to a higher level than itself water which

will keep it in motion by its descent.

Power, or that which does work, is found in nature and cannot be created by man without expending an equal amount of power in that creation. Matter is found in nature in a condition of power, such as coal, which, in burning, will give out power sufficient to do a certain quantity of work, but then the power is exhausted in doing the work. We may wind up a clock and in this process we put ~~which~~ a certain amount of power which is given off tick by tick - the sum of the impulses of the ticks being just equal to the sum of the energy expended in winding up the clock.

A machine is an instrument for the application of power found in nature and not for the creation of power. Water at the level of the sea has no power in it, but if by some extraneous power a portion of the water is lifted up to a higher level it gives out in its descent precisely the same amount of power expended in its elevation - and no more.

Very truly yours,

Joseph Henry

Rec'd.

G. W. Varnum M.D.,
Cambridge,
Md.

Jan
1864 (270)

Smithsonian Institution
Washington D.C.
January 15. 1864.

Dear Sir:

I write to thank you for the copy of the meteorological register with which you have favored the Smithsonian Institution and to inform you that we have made up a collection of papers published by the Institution including those as far as possible contained in your list which we shall send by mail under frank of the Commissioner of Agriculture. We shall also forward to you several copies for instructions for making meteorological records with the accompanying blank forms.

We regret that we have but few full sets remaining of the "Miscellaneous Collections" which are reserved for public institutions.

We can supply you with the Reports of the Institution for 1853'4 and 5. that for 1856 is out of print. A copy may occasionally be found at the stall of some second hand bookseller.

We have now adopted the plan of stereotyping all we publish and in future will thus be able to supply all the demands which may be made for the subsequent papers.

Very Respectfully
Your Obd.t Serv.t
Joseph Henry
Secretary Smiv Ins.t

James S. Lippincott
Haddonfield
N. J.

DSI

Smithsonian Institution,
Washington, April 16. 1863.

Dear Sir:

We are much pleased to learn that you have made good use of the volume of meteorological reductions, and hope to be able to send you the second volume within the present year. It is now in press. We are however unable to say definitely when it will be finished, since this depends upon the rapidity with which the public printer can execute the large amount of government work on which he is now engaged.

We shall send you by mail such copies of our reports as we can spare & shall look forward with interest for the publication of your paper in the Patent Office Report.

I am, very respy.

Your obed't. serv't.

Joseph Henry

Secretary S. I.

Jas. S. Lippincott,
Haddonfield, N. J.

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Smithsonian Institution
May 31 1849

My Dear Sir

Dr Bache informs me that you have made an interesting series of obervations on Thunder Storms, from which it appears that storms of this kind occur, nearly at the same time, in patches, along lines extending many miles in an East and West direction. Please inform me whether your observations have been published and if so where I can have access to an account of them.

We have commenced our courses of Lectures in the Smithsonian Institution, but shall not do much in this line untill after the meeting of Congress. The plan we have adopted is that of inviting only those who have distinguished themselves by original research, or those who can speak with authority from their own experience on the subject on which they lecture. Among those by whose assistance we wish to make an impression on Congress, in the way of improving the Science of the country, are your brother Henry and yourself. I regret that our funds are so much absorbed by the erection of the building, that we are able to pay scarcely more than is sufficient to defray the expense, say twenty five dollars a lecture.

I remain very respectfully Your obedient servant
Joseph Henry

Prof. W. B. Rogers
Sec. Smithsonian Institution

25

Prof. Henry explains the Commission on Rio San Juan

National Academy of Sciences
Washington,
July 13, 1866

Dear Sir;

I have received from the State Department, a letter requesting the investigation and report by the National Academy, "upon the practi= "cability and best meand of improving "the navigation of the river, and "reclaiming the harbor of San Juan del "Norte, Nicaragua".

I have the honor under the Laws of the National Academy to appoint the following committee: A. A. Humphreys, Chairmdn; Chas A. Davis, and by authority of Art 11 - Sec. 4. Henry Mitchell, Asst. Coast Survey

Very respectfully Yours

Joseph Henry

Adm'l C. H. Davis
U.S.N.

Vice Pres't.
Nat. Acad. of Sci.

DSI

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Smithsonian Institution
Washington February 28. 1865

Dear Sir:

We thank you for the record of the temperature of November which you sent us. and would be pleased to have you furnish us with a Register of the weather, monthly, on blanks, a supply of which we send you herewith. This Institution is collecting all the materials it can obtain with reference to the meteorology of the United States, and if you have kept a record for some years it would be desirable to add a copy of it to our files.

Yours, very respectfully

Joseph Henry

Secty. Smiths. Inst.

L. A. Miller,
Woodstock,
Vermont.

New-York saturday
July 22nd 1871

My Dear Dr Bessels

I arrived at the navy yard of this city last night on an excursion from washington in one of the government vessels and learned that the transport which is to convey stores for your expedition leaves on Monday morning. I regret that I am not able to remain in the city to see them off but must leave for Washington at 12 oclock this day.

I have received but one letter from you;—the one which you wrote from Newyork before the electrometer was received by you. I therefore concluded that you obtained the galvanometers and that you were fitted out with every thing required.

I received about ten days ago a letter from you Mother making inquiry as to your health and when you sailed. I gave her an answer immediately informing her of your

to some business. I am called to breakfast and must therefore close this epistle with the earnest hope that you will have a prosperous voyage and a safe return. I can assure you that no one will rejoice more than myself to take you again by the hand on your return.

Truly your friend

Joseph Henry

of your departure, of the position you held in the expedition and of the many friends you had made in this country. I doubt not the letter will show her heart and in some degree reconcile her to your perilous voyage.

I know nothing of interest to communicate except that Mrs. Henry is getting well very rapidly. The bones of her arm and colar have both united. She is able to sit up, but not as yet to walk except a few steps. She has now told your mother how much she was indebted to you for kind attendance and to say that she would have written herself had she not been deprived of the use of her right hand.

I shall send you by express the copy of Agassiz's work on the glaciers and hope it will reach you in safety.

All the appairs are going on at the Institution as usual. I am busily engaged in correcting the proof of our annual Report and also of the 18th quarto volume of our contributions to knowledge. As soon as these are finished I have some thoughts of starting for California on business connected with the Light-House Board, and also with the subject of weights and measures. The journey will be a long one, but I think it will be of service to my health. I shall probably take one of my daughters with me.

Professor Baird is busily engaged in his fish investigations and is having great success in obtaining a large assembly. I doubt not that he will be able to make a very interesting report.

I am writing this on board the steamer Tallapoosa while waiting for breakfast. I was invited to go in her with the admiral Shubrick to Boston, but I am unable to leave Washington longer than three days and therefore must return this afternoon. Before I start I must attend

Smithsonian Instn
Dec 11th 1865

Dear Sir

My daughter wrote to you a
few days ago as to the inscription on
the tombstone of my son but I see
she made a mistake in regard to
the date. He was born in 1831 instead of 1832. Please make this
correction if it be not too late,
and send me an account of the cost
of the stone and I will forward
a draft for the amount.

I am very truly yours.
Joseph Henry

Edwin Dobbs Esq
Marble Yard
, Md

Dec. 11/65-
Joseph Henry

HENRY, J. ALS 1.6.76

20 –

SMITHSONIAN INSTITUTION,

Washington, D. C., January 6 187 6

Dear Sir:

We have to say in reply to your inquiry of the 27th ult. that we can furnish you with a set of the Reports of the Institution for the years 1863 — 1874 (both inclusive) in exchange for an equivalent in the way of stone implements of aboriginal manufacture. We are desirous of making as large a display as possible of such objects at the Centennial Exposition.

Truly Yours &c

Joseph Henry

H. P. Chief,
Kansas City, Mo.

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Jos Henry
Smithsonian Instn
Nov 13/61

Jos Henry
Smithsonian Institute
Nov 13/61

DSI

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Smithsonian Inst.
Nov. 13th 1861

My Dear Col. Bowman.

Col. Wilmot of the Royal artillery will visit West Point in the course of a few days & I write to commend him to your kind attention.

He has been connected with woolwich and will be much interested in every thing pertaining to the academy.

You will find him, although quiet and unobtrusive, a gentleman of high scientific attainment. He had charge some years ago of the magnetic observatory at the cape of Good Hope and is

now stationed in Canada.
I have been gratified
to learn that your health has
been much improved and
I hope you are well pleased
with the important duties
which have been assigned
you.

How great has been the
change in our country
since last we met! How
dark the future! But on
this subject it is unwise
to hazard a conjecture. We must
be content to do our duty as
loyal citizens.

I remain with much esteem
Very truly your friend
& servt Joseph Henry

Washington Dec 2. 31st 1860

My Dear Miss Harris

In looking over a lot of papers I find your note asking my autograph. It must have been received at the Institution during my absence and has not until this morning fallen under my notice.

I trust this statement will be a sufficient explanation of my seeming want of courtesy in not acknowledging your communication; and that you will still accept the assurance that

I am very respectfully

Your Obt. Servt

Joseph Henry

DSI

Smithsonian Inst.
March 17th/1857

My dear Sir

I wrote to acknowledge
the receipt of your memoir
which was safely delivered
by Mr. Truman Smith.

It will be submitted to a
committee for examination
and the result communicated
to you as soon as possible.

I remain very truly
Your friend & servt
Joseph Henry
Sec. S. I.

Professor Olmsted
Yale College

35 Joseph Henry

Smithsonian Institution

Oct 25th 1855

My Dear Sir

In looking over the packages in the Library of the Institution we find a box containing a set of small books in French the Mercure de France dédié au Roy They are bound in red leather and the box had your name on the cover.

I write to ask whether you had ever purchased them from Henry Stevens. I recollect they were sent to the Institution by him and that I declined the intention to send them back to the custom house

DSI

I was only prevented from doing so by being informed that they had been sold to you for the Aston Library. I had forgotten the occurrence until it was recalled to my mind by the discovery of the box with your name on the lid.

I hope you have reached New-York in safety and find every thing in connection with your important establishment in good condition. I trust your visit to Washington was as profitable as you expected it would be and that you enjoyed yourself while here as well as the bad weather and other circumstances would admit. I was much gratified with the commendation you bestowed on the Smithsonian Library. Opinions must be weighed instead of counted and according to this rule your estimation your judgment is of great value.

I remain with much esteem
your friend and servt
Joseph Henry

Dr. Cogswell
Aston Library
New-York

Prof: Henry
May 9/68

(17)

Smithsonian Inst.n
May 9th 1868—

My Dear sir

It gives me much pleasure
to accept your kind offer of
hospitality during the meeting
of the national academy.

The making up of the packages
for Europe will probably not be
completed under two or three
weeks and any thing you may
send previous to that time
will be forwarded.

Truly yours &—
Joseph Henry

Dr. Pliney Earle
Northampton

2 - 5
10x13

DSI

16 H

Smithsonian Institution

Dec 10th 1867

Dear Sir

If nothing happens to prevent I shall be in New-York on Thursday and will be ready on Friday or Saturday to make the final trial of comparisons between the Syracuse and the trumpet. I shall call at Van Nostrands, 192 Broadway where you can leave any address.

Truly yours

Joseph Henry

Jas A Robinson Esq

New York

Smithsonian

June 15th 1865

Dear Sir

You will oblige me by calling at the Institution tomorrow before ten o'clock. I wish to consult you in regard to some work I desire to have done.

I have an engagement in the city at 10 o'clock and on this account I must be early down to go coming to the Institution

Truly yours &
Joseph Henry

E. M. Schaeffer
Washington

ISO

Smithsonian

June 11th 187[illegible]

To Henry

My Dear Admiral

I have written to Capt Patterson and learn from him that it will be convenient for him to meet as one of the commission at 5 o'clock this afternoon. We shall therefore be with you at the hour above mentioned if no accident happens to prevent.

I hope you got home safely last night and that

the medicines you procured
relieved Mrs. Davis
The ways of Providence
are truly inscrutable
for why should one so
amiable be thus afflicted
Truly yours &
Joseph Henry

Samuel Davis
Superintendent of the
National Observatory

August 11th 1848

My Dear Sir

Permit me to introduce
to your attention the bearer
of this note Mr Henry Horner
the Senator of this Legislature.
He wishes to ask employment
for a relative, and I beg to
commend his request to your
kind attention.

I remain with much
Respect Truly yours
Joseph Henry

General N. Michler
Army U.S.

Smithsonian
Institution
Nov 4th 1857

My Dear Sir

I wrote to you on the 23rd of last month to ask at what time you could [illegible] before the Smithsonian Institute and the title of your course also the number you would prefer to deliver. I also asked you to inform us when a letter could find you Brother Henry - not having received an answer

I address you again
please give me
an answer as
soon as possible
Our course of lectures
must begin about
the 1st of Dec.

Yours truly

Louisa Stump

Prof. W. B. Rogers

Washington March 3rd 1866

My Dear Sir

I regret that amidst a pressure of business I have neglected to forward you the amount due you for the grave stones you sent to Princeton. They were duly received by the Murphy and are now in place.

Accompanying this I send you a draft on Philadelphia for the sum due. Please return me a receipt for the same. I remain very truly

Yours &c

Joseph Henry

Edwin Gable esq
Philadelphia

Prof. Joseph Henry
Washington

DSI

Washington Oct. 31st 1864

My Dear Sir

In reply to your letter of the 25th, which has just been received, I hasten to say that your account has been for several days on our table for adjustment, but that we have been delayed in its settlement by want of information on one point.

It appears from our books that in 1863 we paid Mr. B. Smith on your account, and with your authority, $125 for 70 copies of the Pima or Navomé Grammar, while we find $133 charged in your account for 80 copies of the same work

on reporting this matter
to Professor Baird who has
charge of the articles retained
for distribution to applicants
that last one [illegible] of the journal
in question was received and
it does then is some mistake
[illegible]
will you be so good as
to confer with Mr. Smith
[illegible] this point and give
[illegible] the necessary information
[illegible]
Truly yours &c
Joseph Henry

J. G. Shea Esq
[illegible]

DSI

The discoverer
of the Electro
mag. Tel.
(See this art.
in Am. Journ
of Sc. 1831.

Prof Joseph Henry 1st

Smithsonian Inst
Nov 30th 1854

My Dear Sir

Your letter introducing Mr Belcourt was duly received and I write to inform you that I entirely agree with you in my estimation of the value of the work prepared by this gentleman.

The publication of works of this kind is strictly in accordance with the Smithsonian

enough in the country to warrant such an appropriation of a fund bequeathed for the benefit of mankind to a mere local object.

I remain very truly your obt servt.

Joseph Henry

DSI

bequest and not inconsistible with the laws of organization of the Institution. Unfortunately however so much of the income of the Smithsonian fund is devoted to local objects that but a small proportion can be appropriated to the more legitimate objects of the bequest. I cannot therefore say when we should be able to engage in the publication of the work in question. I think it probable however that a sum liberal individuals may be induced to loan at least a part of the expense of the printing.

I am glad to find that you heartily appreciate my views of the Smithsonian Institution. There will be a violent attempt made to induce Congress or the Regents to change the whole policy and to convert the Institution into a miscellaneous library. I trust there is intelligence and honesty

420

Smithsonian Institution
Oct 23rd - 1850

My Dear Sir

I write to ask at what time you can most conveniently lecture before the Smithsonian Institution and that you will give me the number and title of your lectures.

The next session of Congress is the short one, and I would therefore hope that you should come on as early as possible, the Lectures begin about the 1st of Dec.

Dr Hare wrote to

your Brother Henry
asking when he can
complete his course.
His letter was addressed
to him at Boston. It
was written upwards
of a fortnight ago but
no answer has been
received - We expect
him to commence the
course for next winter
and if you know where
he is to be found you
will oblige me by writing
to him or by giving us
his address.

I believe me to you

are acquainted with the
fact that on account of
the great demands on the
funds of the Institution
for the erection of the
building we are unable
to pay more than 25
Dolls for each lecture.

I remain very truly
Your friend & Servt
Joseph Henry

Prof. W. B. Rogers

The Smithsonian Institution,

AT WASHINGTON,

has received 1°. Darstellung des nachtheiligen Einflusses des Tropenklima's auf Bewohner gemässigter Zonen, v. Leipzig 1851. 8vo — 2°. Java seine Gestalt, Pflanzendecke und innere Bauart (in nine pts 8vo and folio atlas).

Presented by Adolph Hoffmann, Esq, Leipzig.

for which the Institution returns a grateful acknowledgment

Joseph Henry

Sec'y. Smithn. Inst.

Smithsonian Institution,

Washington, June 20. 1854.

A KINDRED SPIRIT IN THE UNITED STATES

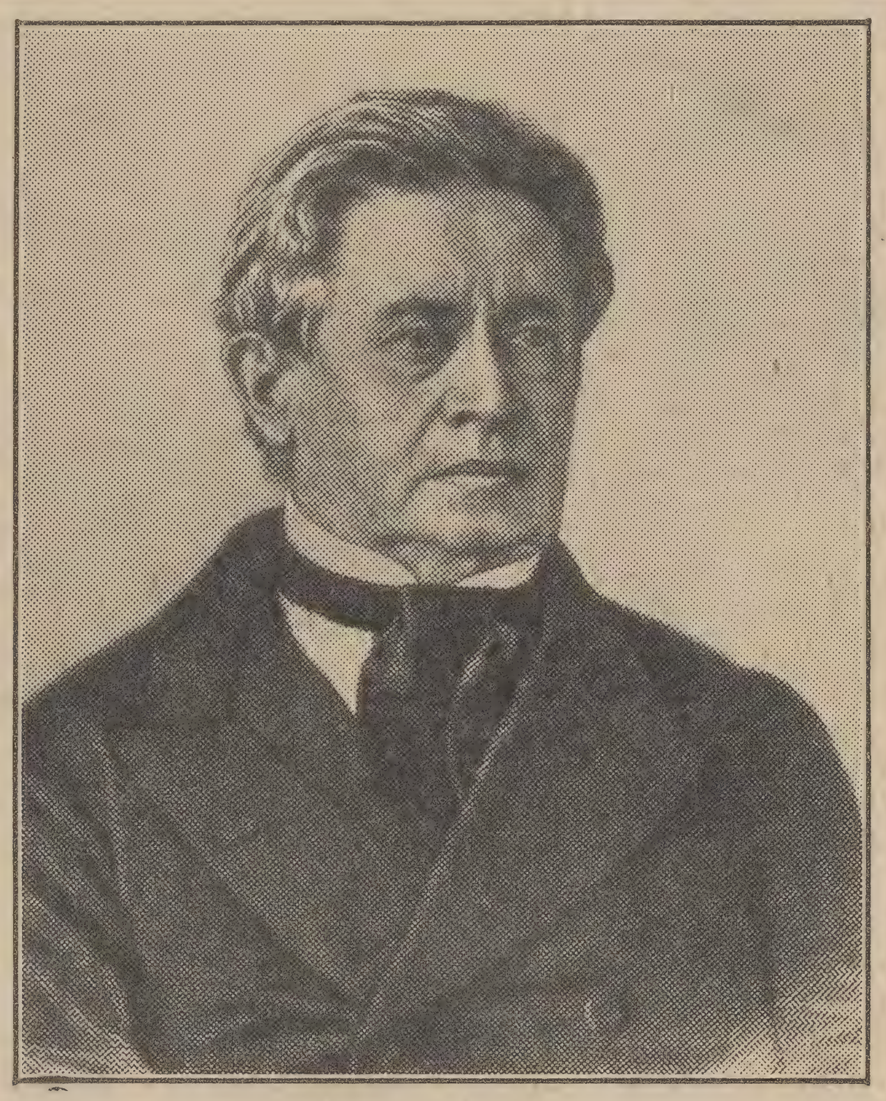
EXPLOITS OF JOSEPH HENRY

THE SMITHSONIAN INSTITUTION

By Professor W. F. Magie

Joseph Henry was an American physicist whose life was in many respects similar to that of Faraday and whose scientific work touched on Faraday's in many points. He was born in Albany, New York, December 17, 1797. His father was a day-labourer and his family was in humble circumstances. Like Faraday he was apprenticed to a trade, in his case that of a watchmaker and jeweller. He did not like the work and used to say that he was considered too dull to learn the trade. Just as Faraday's attention was drawn to experimental science by reading Mrs. Marcet's "Conversations on Chemistry," so Henry's interest was excited by reading Dr. Gregory's "Lectures on Experimental Philosophy, Astronomy, and Chemistry." He had had the ordinary education which could be obtained at that time in a country school. By hard work and great self-denial he was able to prepare himself in a year or two for admission to advanced standing in the Albany Academy, a school at that time of great repute and in which there seems to have been a lively interest in science. He was, while still a student, appointed an assistant to the professor of chemistry, so that he was able to complete his course without interruption by the necessity of earning money otherwise. After he finished his course he spent two years as a private tutor in a wealthy family and used his leisure time in the study of chemistry and physiology with a view to the study of medicine. He also read mathematics. In the autumn of 1826 he was elected to the professorship of mathematics and natural philosophy in the Albany Academy.

When the circumstances of Henry's life at this time are considered it is a wonder that he accomplished what he did. He taught for seven hours a day, and the only time which he had really at his disposal came with the vacations in the summer. He had no laboratory or proper scientific equipment. His apparatus he had to make himself with materials which he bought. And he was very much alone. There was nothing in his life comparable with the opportunities which were furnished to Faraday by his intimate association with Sir Humphry Davy and with the other distinguished men of science who frequented the Royal Institution. Notwithstanding these unfavourable conditions, as soon as he was settled in his new position he began researches in what was then the comparatively new science of electro-magnetism. It first occurred to him that by insulating the wires which were used in the construction of the instruments employed to demonstrate the interactions of electric currents he might wrap them in coils instead of using single bare wires, and in this way might produce a greater magnetic effect without the use of a large and expensive voltaic battery. His first paper on the subject, presented to the Albany Institute, describes the results of this improvement. By this method he was able to exhibit all the electro-magnetic effects, using only a single voltaic cell.



JOSEPH HENRY, Faraday's great contemporary in the United States, whose work touched upon that of Faraday at many points.

BATTERIES AND MAGNETS

It then occurred to him that by using similar insulated wire improvements might be made in the construction of the electro-magnet. The Sturgeon magnet, which was the one then generally used, was made by bending an iron bar in the horse-shoe form, covering it with sealing wax, and then winding around it in a loose spiral a few feet of bare copper wire. By using his insulated wire Henry was able to bring the spires close together and to coil them over one another in several layers. He found that with this construction the magnets which he made were much more powerful than any of which he had any knowledge. He exhibited the first one made on this plan to the Albany Institute in 1828. From time to time he made other and more powerful magnets. The largest one of these, which was made after he removed to Princeton, sustained a weight of 3,600lb.

Henry soon began to investigate the possibility of transmitting the magnetic action through a long circuit. He found that to do this he needed a number of cells in series and that the magnet which exhibited the action best was one wound with many turns of one long wire. He called this battery an "intensity battery," and the magnet an "intensity magnet." The other form of magnet, in which a number of coils were wound in parallel around the iron core, he called a "quantity magnet." The characteristics of these magnets were studied by means of a magnet constructed with several coils, of which the ends projected so that they could be joined in different ways. Henry's magnets were far superior to those which were made at about the same time by Moll of Utrecht.

While working on these magnets, Henry's mind was busy with the question of producing electricity from magnetism. To many men it had occurred that as magnetism could be produced from electricity so it ought to be possible in some way to reverse the action. In August, 1831, he was engaged in constructing a large magnet and a great reel of insulated wire for use in experiments on this subject. When school opened in the autumn, he laid this work aside to take up his duties as a teacher, and apparently did nothing more with the subject until, in June of the next year, he saw in the *Annals of Philosophy* a short description of a lecture given by Faraday at the Royal Institution in which the essential features of Faraday's discovery of the induced current were described. He then took up the subject again and published, in July, 1832, a paper in which he describes an experiment by which the induced current was produced, which he says he made before having any knowledge of Faraday's method. In Henry's method a coil of insulated wire was wound closely around the armature of his experimental magnet. This armature was placed in position and clamped firmly against the magnet. The ends of the coil were joined to two long wires leading to a galvanometer. When the plates of the battery which actuated the magnet were immersed, the needle of the galvanometer was thrown momentarily in one sense. When the plates were removed the needle moved in the opposite sense. It is not known when this experiment was first tried. It seems probable that it was as early as the summer of 1831, and possibly as early as 1830. Miss Mary A. Henry says that her father often expressed to his family his regret that he had postponed so long the publication of his discovery, and she quotes from a friend of her father the following statement:—"Your father often spoke to me of his disappointment about that discovery. 'I ought to have published it earlier,' he used to say, 'but I had so little time. It was so hard to get things done. I desired to get out my

results in good form, and how could I know that another on the other side of the Atlantic was busy with the same thing?'" Henry never published anything about the discovery of the induced current in such a way as to claim it for himself. He always ascribed it to Faraday. Yet as we examine the evidence it seems probable that he was really the first discoverer and that he failed to be recognized as such only by his desire to perfect his work before publishing it.

In the same paper in which he presented this work Henry described an experiment by which he showed that when the poles of a voltaic cell were joined by a short wire no spark appeared, either when the circuit was made or when it was broken, whereas when the poles were joined by a long wire, and particularly if the wire was coiled on itself into a spiral, while the appearance, when the circuit was made, was the same as in the other case, a bright spark appeared when the circuit was broken. This result Henry explained as the result of an induced current produced in the circuit by the cessation of its own current, referring in his explanation to Faraday's observations.

In the autumn of 1832 Henry was called to the professorship of natural philosophy in the College of New Jersey (now Princeton University), in Princeton, New Jersey. His removal to that place and the calls on his time and thought which resulted from the work of his Chair interfered for a while with his researches. In 1835 he learned that Faraday was engaged with the investigation of the phenomenon of the extra current. He then put together his investigations on the subject and presented them to the American Philosophical Society of Philadelphia. An abstract of his communication was published at once at the request of his friends, who insisted that he should not allow his priority in this matter to be overlooked.

While he was still in Albany Henry constructed a little model of an electromagnetic motor in which an iron bar wound with insulated wire and poised horizontally on two upright supports above a long permanent magnet was made to oscillate automatically when electric currents were sent through the coil alternately in opposite senses. Henry considered this instrument a "philosophical toy," though he thought that perhaps in the future something might be developed along similar lines which would be of use. From the consideration of the cost of the battery required to move the motor he decided that it could not be used economically. It was also at Albany that Henry arranged a circuit containing nearly a mile of wire strung around the walls of a large room in the academy. This circuit contained one of his "intensity" magnets, which was called into action by an "intensity" battery, so as to move a permanent magnet poised on a pivot, which struck a bell and thus transmitted signals. After coming to Princeton Henry set up a wire between his laboratory and his distant house, and completed the circuit through the earth by utilizing two wells. Through this circuit signals were transmitted by an arrangement similar in principle to the one which he had used in Albany. He used the current in this circuit to actuate a magnet in his laboratory which lifted a forked wire out of two mercury cups and thus broke the circuit of his great magnet. This arrangement involved the principle of the relay which was afterwards applied in telegraphy, and the whole system was a precursor of the electromagnetic telegraph as it was developed by Morse. In 1837 the trustees of the college gave Henry a year's leave of absence on full salary that he might have an opportunity to visit Europe. While in London he formed a warm friendship with Faraday, with whom he had frequent interviews. He also met other distinguished scientific men in England and in Paris. He presented two communications at the meeting of the British Association in September of that year.

After his return to Princeton Henry again took up the study of induced currents. Faraday had dropped the subject and the others who had worked after him in it had studied, Henry says, "the induction of magnetism and the perfection of the magneto-electrical machine: and I know of no attempts, except my own, to review and extend the purely electrical part of Dr. Faraday's admirable discovery." His first paper on this general subject was read in November, 1838. For use in his projected experiments he constructed a number of flat spirals of copper ribbon, insulated by wrappings of silk, and also a set of helices containing hundreds of yards of insulated copper wire. As an indicator of the presence and direction of a current he used most frequently what he called a magnetizing spiral. This was simply a spiral coil of wire wound round a straw or a thin-walled glass tube within which a sewing needle was placed that was magnetized when a current passed through the coil. He also employed the shock felt in the arms or body for the same purpose. A small quantity magnet and sometimes a decomposing cell were used to indicate the presence of a quantity current.

Henry first showed by the use of a long helix that the current of self-induction, appearing when the circuit was broken, was one of great intensity. This was shown by the shock which could be delivered by it through the body. By using the copper spirals and the wire helices in different combinations, he showed that a quantity current in the primary could produce either a quantity current or an intensity current, according as another spiral or a helix was used as the secondary, and further that an intensity current could produce a quantity current in the secondary. He then proceeded to investigate induced currents of higher orders than the first. Having connected the ends of the ordinary secondary to another similar coil placed at some little distance from it, he used this part of the secondary as a primary to act on another coil placed above it. He was by no means sure that any effect would appear in the third coil. It seemed possible that the growth and decline of the secondary current might occur in so short a time as to blend the effects of these changes. He found, however, that a current of considerable intensity was produced in the tertiary coil.

By introducing other coils in similar more extensive arrangements, he was able to examine induced currents up to the fifth order. He found that they could hardly be detected by the methods used to determine quantity but that they usually magnetized the needle in the magnetizing spiral and gave very perceptible shocks in the body. He was then led to hope, by reflecting on the short duration of the secondary current by which the higher orders were set up, that a discharge from a Leyden jar might have a similar effect. He found that this was the case and he was able to observe induced currents originating from the discharge of the jar through several orders. He was much impressed by the distance through which the inductive effect could be transmitted when the electrical discharge was used. In one experiment in his laboratory the distance between the primary and secondary was over 30 feet and two floors intervened. In another experiment he discharged a Leyden jar through the telegraph wire which joined the laboratory with his house, and found that he could detect with the magnetizing spiral a current induced in a parallel wire over 250 feet away. The magnetizing spiral showed an effect even when there was a gap in the secondary wire, thus proving that the current did not arise by leakage from the primary through the earth. The performance was almost exactly that of the wireless telegraph.

Some apparent anomalies in the directions of the various induced currents of the different orders, as indicated by the magnetizing spiral, led Henry to investigate the behaviour of the spiral more accurately. Following out a suggestion of Savary, he found that when the jar was discharged successively in the same sense through the spiral the needle was not always magnetized in the same sense, and he decided that the discharge of an electrified conductor is not a simple flow of electricity in one direction but consists of a succession of discharges in opposite directions. That is, the discharge, in many instances, is oscillatory. This conclusion of Henry's was afterwards experimentally confirmed by Feddersen and its theory developed by Lord Kelvin.

By the will of James Smithson, a British subject, a fortune of £100,000 was bequeathed "to the United States of America to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." After a discussion of many years, in which various plans were proposed for the use of this bequest, Congress finally, in 1846 created a Board of Regents, and entrusted to this Board the expenditure of the income from the Smithsonian fund, in a way consistent with the conditions of the bequest, with the proviso that a building should be erected in which to house collections of objects of nature and art and a library. The Board realized that, more than anything else, the success of the Institution would depend on the individual who was chosen as secretary. Henry was among the scientific men whose opinion as to the proper disposition of the fund had been obtained in the course of the discussion. From the first he had urged that Smithson's bequest was to be administered for the benefit of all mankind and that it was to be used to increase knowledge by stimulating original research and to diffuse knowledge by the publication of memoirs containing original work and of reports on the progress of science. Not only was Henry's scientific reputation high, but he was known to be a man of entire integrity and of sound judgment. Though extremely reluctant to give up his congenial work at Princeton, he yielded to the call of the Board of Regents and accepted the position of Secretary of the Smithsonian Institution in December, 1846.

Henry's scientific work during the last 30 years of his life was much restricted by the numerous duties of his office. He initiated the system of observations of the weather in various parts of the United States and the transmission of these observations by telegraph to Washington, where they could be studied. The system of weather prediction, which grew out of these observations, became so important for the nation that it was soon handed over to a branch of the Government. He was a member of the Lighthouse Board and the chairman of its committee on experiments. He also investigated the matter of fog signals and the peculiar inaudibility of these signals which was sometimes noticed at sea. He found that his observations could all be co-ordinated by the theory of Stokes, who explained how the direction in which a sound wave travels may be altered by the effect of the prevailing wind.

It was in his eightieth year, while he was engaged on his investigations for the Lighthouse Board, that he noticed the first symptoms of nephritis. The disease progressed rapidly and led to his death in Washington on May 13, 1878.

AUTOGRAPHE

de

Henry

Joseph

OBSERVATIONS

1.) D. S. 1 p. 4°, Washington, 20.6.1854 auf Papier „The Smithsonian Institution" Bestätigung über den Empfang von Büchern, welche A. Hoffmann, Leipzig dem Institut sandte.
Aus Sammlung Dr. R. Loewenfeld.

2.) L. a. s. 3½ p. 4°, Newyork, 22.7.1871 geschrieben an Dr. Bessels, wegen Apparaten, die der Empfänger auf seine Expedition mitnimmt, wissenschaftlichen Inhaltes über seine Arbeiten in der nächsten Zukunft, Kanalbauten in California, Maße und Gewichte.

H E N R Y Joseph, Naturforscher geb.17.12.1797zu Albany im Staat New York,gest.13.5.1878 in Washington,wurde 1826 Prof.d.Mathematik in Albany,begann 1827 elektromagnetische Untersuchungen,zeigte 1831,dass elektrische Telegraphie möglich sei, u.wies damals auch die Ausführungsmöglichkeit elektromagnetischer Kraftmaschinen nach.Er wurde 1832 an das College zu Princeton in New Jersey berufen u.1846 bei der Reorganisation der Smithsonian Institution zu deren Sekretär ernannt. Durch s."Jahresberichte",die er seitdem regelmässig schrieb,trug er wesentlich zum Weltruf d.Instituts bei.1871-78 war er Vorsitzender d. Leuchtturmdepartements.H.schrieb: "Contributions to electricity and magnetism"/1839/.Die Smithsonian Institution gab eine Auswahl seiner wissenschaftl.Arbeiten heraus/1886, 2 Bände/Vgl."A Memorial of Joseph H."/Washingt.1880/.Vor der Smithsonian Institution wurde ihm ein Denkmal errichtet.

HENRY, Joseph

A.L.S. dated May 9, 1868
accepting an invitation

HENRY, Joseph
Physicist

A. L. S. dated May 8, 1832

HENRY, Joseph

A. L. S. dated Oct. 23,1850
to Prof. W. B. Rogers
asking when he can lecture
at the Smithsonian Institute

HENRY, Joseph

A. L. S. Jan. 4,1871
asking for copies of
a directory for use by
Smithsonian Institution

HENRY, Joseph
Scientist

A.L.S. to R. Pimby relative
to use of a barometer
Dated Nov. 21,1857

HENRY, Joseph

L. S. to Prof. Rogers
dated May 31,1849

HENRY, Joseph

A. L. S. dated August 11,1848
an Introduction

258 HENRY, JOSEPH. American physicist; first secretary of the Smithsonian Intsitution. L. s. 3 full pp., 4to. Washington, Feby 27, 1877. CARNEGIE-59 $5.00
To Dr. G. W. Varnum regarding a hydraulic engine for the creation of power.

257 HENRY, JOSEPH. American physicist; first secretary of the Smithsonian Institution, Washington, Feby 22, 1870. CARNEGIE-64 $7.50
To Robert Day, Cork, Ireland about copies of "objects of ancient Irish manufacture" for the Smithsonian.

214 HENRY, JOSEPH. Scientist; Secretary of the Smithsonian Institute. L.s. 1 page, 4to. Washington, Nov. 21, 1857. $2.00
On the Smithsonian as a weather bureau helps the farmer. Carnegie 51

HENRY, Joseph (RICHARDS, Brookline, Mass.)
1966

$35.00

47 HENRY, JOSEPH. Physicist; Director of Smithsonian Institution. A.L.S., 1 page, 4to, Washington, March 3, 1866. About family matters. To Edwin Greble. Harris - 68 $10.00

1494 HENRY, JOSEPH. Eminent physicist. First Director and Secretary of the Smithsonian Institution. A.l.s., four pages, folio. Albany, 1832. $25.00
A letter of great importance addressed to *"Prof. Parker Cleaveland—Brunswick—Maine"*. The four closely written pages constitute the equivalent of a paper on magnetism describing their construction, the theory, and laboratory results.

118. **HENRY, Joseph.** American scientist; director of the Smithsonian Institution. LS, full page, 4to, Smithsonian, 1876. To H. P. Child, discussing a trade in which Henry offers an 11-year series of the reports of the Smithsonian in exchange for "stone implements of aboriginal manufacture" which he needs for the centennial exposition. Rendell · 73 $20.00

64 HENRY, JOSEPH. Physicist; designed electromagnets. Director of Smithsonian Institution. Modern unit of induction named in his honor. A.L.S., 1 page, 8vo, Washington, December 11, 1865. About family matters. Harris 167 $15.00

HENRY, Joseph

A. L. S. dated May 31,1849
to Prof. Rogers

enne." Concerning military matters.

226 **GONCOURT, EDMOND DE.** French author. A. L. s. 1 p., 8vo. 4 janvier (18)89. $7.50

227 **GONCOURT, JULES DE.** French author. A. L. s. 1 p., 8vo. 1er December (18)99

240 **HARRISON, BENJAMIN.** President of the U. S. D.s. 1 p., 4to; with seal. Washington, 20 February 1891. Lightly browned; breaking at one fold. $12.50

247 **HARRISON, W. H.** President of the U. S. A.D.s. ½ p., 4to. Fort Wash-

We most ardently hope . . . we shall be able to suppress liscenced trading among the Indians & supply them with such good as they want at the cost of the Government . . . & make some more rigid restrictions and put down if practicable the abominable practice of selling or introducing spi

ueen's closet, mats for the chapel in the Alhambra garden, and ther items.

Beautiful document and an appropriate starting point for a ollection of American historical documents. Of special interest ecause of the reference to the royal residence, the Alhambra, cene of many of Washington Irving's works. With transcription

ico (1824). Military order signed, Feb. 11, 1833, two pages. $6.00

1504 MONCK, GEORGE. First Duke of Albemarle. Distinguished military leader under Cromwell and Charles II, also defeated the Dutch as Admiral of the fleet. L.s., one page, Edinburgh, 1655. Written shortly after he resumed command of the army in Scotland. A military letter concern-

1868. Holmes thanks his correspondent for the "beautiful stained specimens....I expect to give a course...on histology...and I shall avail myself of the two specimens you have sent me...." Holmes was serving at this time as a professor at the Harvard Medical School. $60.00

130. **HOLMES, O. W.** ALS, full page, 8vo, 1890. To Mrs. Loring. "If I could be

older from Missouri...told me that the Subject was much agitated in ennessee and that he thought that the two old parties would be broken p by it and that Henry Clay & Thomas H. Benton would be found in the ame party...."